



# Physical Protection

## Significance Determination Process



# Physical Protection Significance Determination Process

## Attachment 3

- The objective of this cornerstone is to provide assurance that the safeguards systems can effectively protect against the design basis threat (DBT).
- The attributes of this cornerstone are based on defense in depth and are intended to provide protection against both internal and external threats.



## Physical Protection Significance Determination Process (PPSDP)

- Licensee performance is assessed by considering both performance indicators and findings.
- PPSDP is a logic flow chart that when used results in individual findings categorized into one of the four response bands:
  - GREEN - Licensee Response Band;
  - WHITE - Increased Regulatory Response Band;
  - YELLOW - Required Regulatory Response Band; or
  - RED - Loss of Confidence Response Band.
- This PPSDP is the tool with which NRC inspectors will assess the risk significance of findings.



## Physical Protection Findings

- The input to this logic chart is a finding that has some significance.
- The source of the finding may be either licensee's problem identification systems, events, or NRC inspector observations.



## Entry into the PPSDP

- In order to enter the PPSDP, an observation must pass any one of the following tests:
  - Does the issue have an actual or credible potential impact on safety?;
  - Is the issue an immediate precursor to a more significant issue?;
  - If no action is taken, will the condition worsen?;
  - Will recurrence of the issue result in a more significant concern?



## From an Observation to a Finding

- Once defined, the finding will be evaluated using the PPSDP chart and definitions



## PPSDP Assumptions

- The following assumptions are necessary to understand and efficiently utilize this evaluation tool.
  - Substantive reduction in the effectiveness of security performance produces some increased risk, even without an actual event.
  - Operational solutions are relevant in determining risk significance of a completed or the substantial potential for the successful completion of an act of radiological sabotage.
  - Both the insider and external elements of the DBT are considered in the PPSDP.
  - Multiple findings at a low level do not necessarily increase risk, unless the repetitiveness or ability to reproduce the problem relate to the capabilities of the design basis threat.



## Logic Block Definitions

- **Access control** - All elements necessary to ensure that access of vehicles, material and personnel into the protected area and vital areas are properly implemented.
- **BOP** - Behavioral Observation Program as defined in the licensee's plan.
- **DBT** - Design Basis Threat. This includes the Adversary Design Characteristics (ADC as defined. [ADC currently under construction]
- **Evaluated exercise** - A planned evolution used to evaluate the plant's integrated response to a contingency event or defend against the Design Basis Threat (DBT) or a component thereof. The exercise is judged against a set of criteria to determine if required capabilities or training objectives have been met.





## Logic Block Definitions

### Continued

- **Exploitable** - A condition in which a potential adversary is able to capitalize on equipment, system or procedural deficiencies for which inadequate compensation has been provided.
- **Finding** - An output/result of using the MC 0610\* minimum threshold process for evaluating an observation.
- **Green** - Performance only calling for NRC "baseline" oversight - Cornerstone objectives fully met. No significant deviation from expected performance. (NUREG-1649, "New NRC Reactor Inspection and Oversight Program.")
- **Interdict** - Action taken by the licensee's contingency response force to successfully deny an adversarial intrusion from damaging elements of target sets.



# Logic Block Definitions

## Continued

- **Intrusion** - An act of wrongfully entering a protected or vital area, **during an event or evaluated exercise.**
- **Malevolent act** - An attempt to produce harm within the scope of the DBT.
- **Performance objectives of protective strategy** - The defined objectives in the licensee's plans or procedures to protect the plant against the design basis threat of radiological sabotage.
- **Loss of function** - Incapable of performing its intended purpose.



# Logic Block Definitions

## Continued

- **Plans** - Licensee documents that detail requirements or processes for implementation of safeguards programs.
- **Physical protection systems** - Equipment or systems installed or personnel posted at the perimeter of the protected area and vital areas for intrusion prevention, detection and assessment purposes.
- **Predictable** - Based on the manner in which a program was implemented or how equipment or systems were operating, it could be determined in advance that a specific occurrence might be made to happen, e.g., metal detectors, intrusion detection zones could be circumvented or defeated without detection based on the special knowledge obtained beforehand.
- **Radiological Sabotage** - [Definition deferred pending NRC evaluation.]



# Logic Block Definitions

## Continued

- **Red** - Unacceptable Performance - Plant performance significantly outside design basis. Loss of confidence in ability of plant to provide assurance of public health and safety with continued operation. Significant reduction in margins of safety. (NUREG-1649, “New NRC Reactor Inspection and Oversight Program.”)
- **Repeated deficiency** - A similar deficiency that occurs more than twice in four quarters.
- **Safeguards** - The general term that includes the various specific elements of processes, equipment and people that are focused on plant protection. This includes, but is not limited to physical protection, contingency response, training and qualification, fitness for duty, access authorization, behavior observation, and tactical and operations response to DBT events.



# Logic Block Definitions

## Continued

- **Safeguards contingency response** - An event or evaluated exercise requiring a § 73.55(h) type of response.
- **Significant deficiency** - A deficiency that would likely render a protective strategy ineffective.
- **Similar findings** - Findings that could have been prevented by corrective action taken for a like (in substance or essentials) finding in the past.
- **Structures, Systems and Components (SSCs)** - The assemblage of equipment and buildings such as valves, pumps, switches, electrical power sources, containment and buildings, piping and electrical busses that make up the Target Set. Target Set SSCs are those SSCs that are specifically designed to keep the core cooled and preserve containment integrity when operated in accordance with the plant operating procedures. [After verification that it is consistent with the maintenance rule.]



## Logic Block Definitions

### Continued

- **Target set** - A group of structures, systems or components such that all elements must be rendered non-functional to achieve radiological sabotage.
- **Vulnerability** - condition of systems or plans being open to attack or damage or to a required function being bypassed within the scope of the DBT, to include predictable or exploitable conditions.
- **White** - Performance calling for increased regulatory response. Cornerstone objectives met with minimal reduction in safety margin. Outside bounds of expected performance. Changes in performance but with very small effect on accident risk. (NUREG-1649, "New NRC Reactor Inspection and Oversight Program.")
- **Yellow** - Performance calling for required regulatory response. Cornerstone objectives met but with reduction in safety margin. Changes in performance with a small effect on accident risk. (NUREG-1649, "New NRC Reactor Inspection and Oversight Program.")



## Assumptions for Entering Reactor Safety SDP

- Assumptions must be made prior to entering the Reactor Safety SDP from the PPSDP precipitated by the successful demonstration of a malevolent act(s) that resulted in the loss of function of one or more structures, systems or components of a target set.



## Assumptions for Entering Reactor Safety SDP

### Continued

- Any assumption made pursuant to the use of the Reactor Safety SDP would be based upon conditions that existed only after the threat is known to have been terminated, neutralized or contained.
- Undamaged equipment out of service for maintenance during the safeguards contingency response would be considered as initially unavailable (but potentially recoverable under the guidelines established under the Reactor Safety SDP).
  - This presumes that the adversaries used advanced knowledge of plant maintenance conditions to enhance the chance of success to commit radiological sabotage.





## Assumptions for Entering Reactor Safety SDP

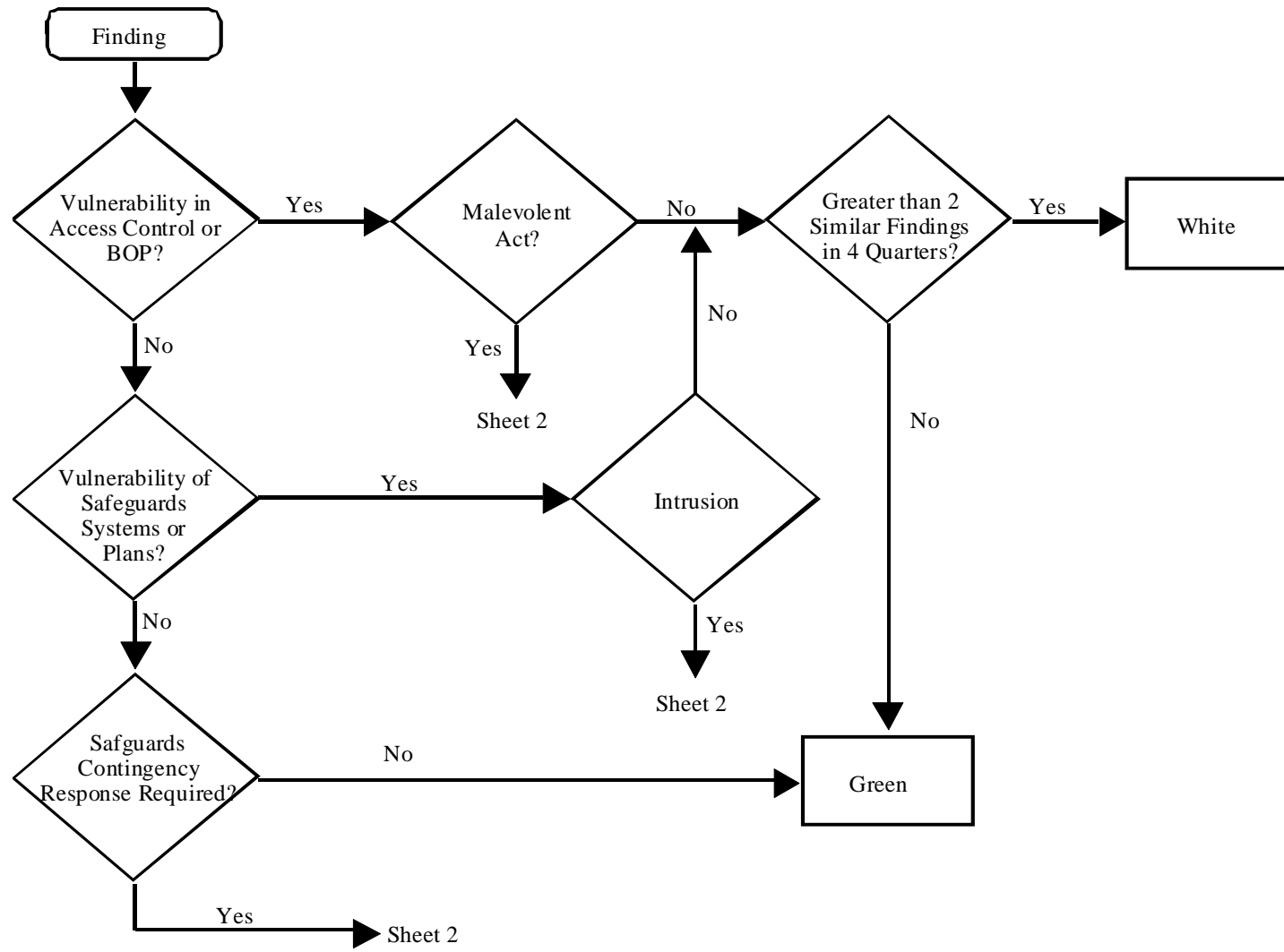
### Continued

- The “exposure time” input needed for the Reactor Safety SDP is the length of time that the plant was being operated or was transitioning to achieve and maintain stable shutdown conditions with equipment degraded due to the attack.
- The exposure time would presumably not be greater than three days so that the Reactor Safety SDP Table 1, third column would be applicable.



## Physical Protection (Sheet 1) Significance Determination Process

(Rev 5, dated Feb 1, 2000)





## Physical Protection (Sheet 2) Significance Determination Process

(Rev5, dated Feb 1, 2000)

